This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-52. Cancelled

Claim 53. (Currently amended) A microscope comprising: an imaging system for creating an image of an object plane using an illumination light beam of a first wavelength comprising a plurality of lenses positioned along a main optical axis of the microscope, and an optical output device for creating an image of the object plane on the image plane;

a system for automatically focusing said image in said microscope, said system for automatically focusing comprising:

an autofocusing light beam of a second wavelength, the autofocusing light beam being directed to reflect off the object plane;

an autofocusing detection device comprising a detection system lens for receiving the reflected autofocusing light beam and directing the reflected autofocusing light beam onto a detection surface;

a plurality of light sensors adapted to measure the light intensity of the reflected autofocusing light beam at said detection surface, wherein the distance that the image of the object plane is displaced from a desired focus reference surface is determined by comparing the intensities measured by the plurality of sensors;

<u>wherein the autofocusing detection device further comprises a prism positioned between the detection system lens and the plurality of light sensors, said prism being configured to divide the autofocusing beam into at least two separate beams, the plurality of light sensors comprising at least two sensor pairs, the first sensor pair being substantially aligned with a first light beam from the prism, the second sensor pair being substantially aligned with a second light beam from the prism, said sensor pairs measuring the intensity of the light beam that strikes each sensor pair;</u>

characterized in that the imaging system further comprises:

a probe arm supporting the plurality of lenses, said probe arm extending generally along the main optical axis;

a scanning stage and a support on which an object [[plane]] to be examined is placed, wherein the object plane substantially extends along a focus plane that is observed through the microscope, and wherein the object plane is substantially parallel to the main optical axis.

Claim 54. (Currently amended) The microscope according to claim 53, wherein the scanning stage and the support are positioned on a separate table than [[the]]a table of the probe arm of the microscope, such that the probe arm is substantially isolated from vibrations created by the scanning stage.

Claim 55. (Cancelled)

Claim 56. (Previously presented) The microscope according to claim 53, wherein the probe arm is substantially elongated so that the optical output device is positioned distant from the object to be examined.

Claim 57. (Previously presented) The microscope according to claim 53, wherein the object is placed in a sampled holding device.

Claims 58-60. (Cancelled)

Claim 61. (Previously presented) The microscope of claim 53, wherein the system for automatically focusing further comprises a feedback controller and focus adjusting device for automatically adjusting the distance between the objective lens and the object plane, based on the reflected autofocusing light beam sensed by said light sensors, in order to properly focus the image in the imaging system.

Claim 62. (Previously presented) The microscope of claim 53, wherein the focus adjusting device is configured to adjust the position of the objective lens in order to properly focus the imaging system on the object plane.

Claim 63. (Previously presented) The microscope of claim 53, further comprising a second optical axis, the second optical axis being positioned between the focus plane and

the main optical axis, the second optical axis being substantially perpendicular to the main optical axis.

Claim 64. (Previously presented) The microscope of claim 53, further comprising a third optical axis being positioned between the main optical axis and image plane in the optical output device, the third optical axis being configured at an angle relative to the main optical axis.

Claim 65. (Previously presented) The microscope of claim 53, wherein the illumination light beam and autofocusing light beam are selected to have different wavelengths so that the light beams do not interfere with one another.

Claim 66. (New) A microscope comprising: an imaging system for creating an image of an object plane using an illumination light beam of a first wavelength comprising a plurality of lenses positioned along a main optical axis of the microscope, and an optical output device for creating an image of the object plane on the image plane;

a system for automatically focusing said image in said microscope, said system for automatically focusing comprising:

an autofocusing light beam of a second wavelength, the autofocusing light beam being directed to reflect off the object plane;

an autofocusing detection device comprising a detection system lens for receiving the reflected autofocusing light beam and directing the reflected autofocusing light beam onto a detection surface;

a plurality of light sensors adapted to measure the light intensity of the reflected autofocusing light beam at said detection surface, wherein the distance that the image of the object plane is displaced from a desired focus reference surface is determined by comparing the intensities measured by the plurality of sensors;

characterized in that the imaging system further comprises

a probe arm supporting the plurality of lenses, said probe arm extending generally along the main optical axis;

a scanning stage and a support on which an object to be examined is placed, wherein the object plane substantially extends along a focus plane that is observed through the microscope, and wherein the object plane is substantially parallel to the main optical axis; wherein the probe arm is positioned between the object to be examined and the scanning stage.

Claim 67. (New) The microscope according to claim 66, wherein the scanning stage and the support are positioned on a separate table than a table of the probe arm of the microscope, such that the probe arm is substantially isolated from vibrations created by the scanning stage.

Claim 68. (New) The microscope according to claim 66, wherein the probe arm is substantially elongated so that the optical output device is positioned distant from the object to be examined.

Claim 69. (New) The microscope according to claim 66, wherein the object is placed in a sampled holding device.

Claim 70. (New) The microscope of claim 66, wherein the system for automatically focusing further comprises a feedback controller and focus adjusting device for automatically adjusting the distance between the objective lens and the object plane, based on the reflected autofocusing light beam sensed by said light sensors, in order to properly focus the image in the imaging system.

Claim 71. (New) The microscope of claim 66, wherein the focus adjusting device is configured to adjust the position of the objective lens in order to properly focus the imaging system on the object plane.

Claim 72. (New) The microscope of claim 66, further comprising a second optical axis, the second optical axis being positioned between the focus plane and the main optical axis, the second optical axis being substantially perpendicular to the main optical axis.

Claim 73. (New) The microscope of claim 66, further comprising a third optical axis being positioned between the main optical axis and image plane in the optical output device, the third optical axis being configured at an angle relative to the main optical axis.

Claim 74. (New) The microscope of claim 66, wherein the illumination light beam and autofocusing light beam are selected to have different wavelengths so that the light beams do not interfere with one another.